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Appl. No.	:	10/753,228
Applicant	:	Kirk W. Wolfgram
Filed	:	January 8, 2004
Title	:	Electric Animal Deterrent for Contact with Underlying Ground System
TC / A.U.	:	3600 / 3643
Examiner	:	Andrea M. Valenti
Docket No.	:	N/A

Andrea M. Valenti
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Andrea Valenti:

In response to your rejection dated September 29, 2004, I have reviewed each of the patents you referenced and agree that there are a great deal of similarities between some of these products and my patent application but to not agree that any of these patents describe, teach of, or claim what I have claimed. In my patent application, the uniqueness of the product is it's ability to deliver a shock with both output electrical conductors in contact with the ground and the underlying ground system. In one embodiment, two output terminals are provided with one of the output terminals being connected to a ground rod electrically connected to the underlying ground system and the other output terminal connected to a separate un-insulated electrical conductor placed in contact with the ground as described in claim 1. In a second embodiment, two high voltage output terminals of opposite polarity are provided both of which are to be connected to separate un-insulated electrical conductors placed in contact with the ground as described in claim 2.

As described starting on page 2 of my patent application, I categorized present animal deterrents in two groups, one group that insulates both conductors from each other and from the underlying ground system, and the second group that uses the underlying ground system as one of it's conductors while insulating the other conductor from the underlying ground system. In both groups of animal deterrents, the conductors must be insulated from each other to keep the output from shorting out. Although the second group of animal deterrents use the underlying ground system as one of it's conductors and is capable of delivering a shock when vegetation touches the fence, it still must

have the other conductor insulated from the underlying ground system to insulate one conductor from the other to keep it from shorting out. With this in mind and the claim information where both conductors are in contact with the ground and underlying ground system in mind, I would like to review each of the patents you sited.

In U.S. Patent No. 4,114,185 by Gallagher, Gallagher claims a typical electric fence controller with an impedance connected to the fence controller's (as shown in Fig. 2) output such that the impedance is a lower impedance than the fence load being connected to the fence controller as described in the last part of both claims 1 and 2. I have seen this feature in several of Gallagher Electronics products and am very familiar with the electric fence industry as I have been developing products for one of Gallagher Electronics' competitors since 1987, have served on the American Society of Agricultural Engineers (ASAE) subcommittee for electric fence controller standards with one of the associates from Gallagher Electronics since 1988, and am currently serving on the STP committee for electric fence controllers for Underwriters Laboratories (UL).

In the electric fence industry, the electric fence controller functions by delivering a high voltage pulse from it's output terminals. One of the output terminals is connected to a ground rod electrically connected to the underlying ground system. The other output terminal is connected to an un-insulated conductor that is supported in the air on insulators creating a wire fence while insulating the fence wire from the ground and underlying ground system. When an animal (or human) touches both the Earth that is connected to the underlying ground system which is connected to one of the electric fence controller's outputs and also touches the un-insulated conductor that is supported in the air on insulators (the fence wire) which is connected to the other electric fence controller's outputs, the circuit is completed allowing current to flow from the electric fence controller, down the un-insulated wire supported on insulators (the fence wire), through the animal (or human), into the underlying ground system, and back to the electric fence controller's other terminal through the ground rod that is also connected to the underlying ground system.

As I have stated in my patent application, in the first sentence of the first full paragraph on page 6, a low impedance fence controller (as described by Gallagher) has an output impedance typically in the hundreds of Ohms. This concurs with Gallagher per the load he chooses to place across the output of the fence controller as described in Column 2, row 25 of his patent. All this is true for an electric fence controller and an electric fence provided the fence consists of an un-insulated wire supported on insulators above the underlying ground system. However, if the un-insulated wire is not supported on insulators and insulated from the underlying ground system, the fence impedance will change from hundreds of ohms to several ohms depending on the length of wire on the ground. With the fence wire not supported on insulators, the electric fence controller's impedance is so high with reference to the several ohm fence wire that the electric

fence controller shorts out and is not able to deliver adequate voltage to deliver a shock. No where does Gallagher describe, teach of, or claim placing the fence wire in contact with the ground nor does Gallagher describe, teach of, or claim placing both conductors in contact with the ground and underlying ground system as per my claims 1 through 14.

While my patent application describes a circuit that may be similar to a low impedance fence controller it is uniquely different in that it uses an output impedance of several ohms. I did not show a schematic since it could be identical to that of a low impedance electric fence controller (including the one described by Gallagher) and since schematics do not typically describe transformer construction and do not typically describe the output impedance of any transformer's shown on the schematic. For this reason, I went into great detail on page 10 and 11 describing the transformer's primary turns, turn ratio, and output impedance so someone skilled in the art of these types of animal deterrents could build such a device. This significantly low output impedance compared to all present technology electric animal deterrents allows the animal deterrent for contact with the underlying ground system to deliver a shock with both conductors in contact with the ground and the underlying ground system.

In U.S. Patent No. 6,184,790 to Gerig, Gerig claims an animal deterrent in the form of a remote receiver unit that is to be worn by the animal. The remote receiver unit is provided with two electrodes (Fig 2, #16 and #18) configured for contacting the animal. In your response on page 3, "Gerig #62" was described as a ground terminal. I respectfully disagree since Gerig describes it as a transistor in column 4, row 45-47. However, I do understand that the transistor #62 is connected to a ground per the schematic's ground symbol which is also connected to one of the two output electrodes (Fig. 2, #18). This ground shown on the schematic is internal to the receiver. If the receiver's internal ground shown on the schematic were connected to a ground rod and the underlying ground system which it is not, the whole concept of a remote receiver would be useless since it would require the remove receiver being physically connected to a ground rod thus eliminating the need for a remote receiver since the animal could just as easily be tied to the ground rod. After reviewing U.S. Patent No. 6,184,790 to Gerig, I do not believe Gerig describes, teaches of, or claims that either output terminal be connected to earth ground and underlying ground system and surely do not believe Gerig describes, teaches of, or claims that both output terminal be connected to the ground and underlying ground system as I have claimed per my claims 1 through 14.

In U.S. Patent No. 6,519,131 to Beck, Beck claims a cattle guard which includes an elongated mat where the bottom and frame consist of an insulating material (Fig 2, #30 and #38) described in column 2, row 59. The elongated insulated mat supports an electrically conductive substrate (Fig. 2 and 3 #34) that is connected to an electric fence controller. Beck describes this conductive substrate in column 3, rows 1 through 37 and

although the conductive surface (#34) may be physically connected to the insulated substrate (#30 and #38), the conductive surface is insulated from the ground and underlying ground system. Beck reinforces separation of the electrical conductor and underlying ground system by describing the hardware passing through the mat (Fig. 2 #54) as non-conductive (described in column 3, row 51). Although the cattle guard is placed on the ground, the electrically conductive substrate in the mat is electrically insulated from earth ground and underlying ground system. Beck does not describe, teach of, or claim connection between the electrical conductor in the cattle guard and underlying ground system directly or indirectly as I have claimed per my claims 1 through 14.

Based on the patents referenced, my background in the electric fence controller and related animal deterrent industries, and based on my searching for a product to deter animals using an electrical conductor system where both un-insulated electrical conductors are placed in contact with the ground and the underlying ground system, I do not believe a device exists that can provide a high voltage shock to the conductor system to deter animals. I also do not believe it is obvious to develop such a product based on present products and the patents referenced. Please re-evaluate my patent application and claims 1-14.

If you have any questions, please don't hesitate to call me at 507-282-6418 or e-mail me at kirkwolfgram@charter.net.

Thank you for your attention in this matter.

Sincerely:

Kirk W. Wolfgram